

Application No.: 10/531,641

Docket No.: JCLA16628

REMARKS**Present Status of the Application**

Under 35 U.S.C. 103(a), claims 6-8, 10 & 16 were rejected as unpatentable over Komori (US 5,407,872), claims 6-12 & 16 rejected over Brandstorm (US 2002/0056508) in view of Komori, claim 13 rejected over Tsukamoto (US 5,857,494) in view of Komori, and claims 14-15 rejected over Kaneko (US 2003/0012600) in view of Komori.

In response, Applicants have amended independent claim 6 and submitted the remarks below, wherein the amendment "the glass composition contains substantially no Nb₂O₅ and La₂O₃" can be supported by page 9/lines 14-16 of the specification. Reconsideration of claims 6-16 is respectfully requested.

Discussion of Rejections under 35 U.S.C. 103(a)

Amended claim 6 features that the glass composition has a BaO/CaO mol ratio of *0.3-1.6* and contains substantially *no* Nb₂O₅ and La₂O₃.

Komori fails to teach the above feature. According to the experiment results shown in Tables 1-5, the BaO/CaO mol ratio of Komori's glass composition is *1.67-2*, which is out of the claimed range of 0.3-1.6 in claim 6. Moreover, Komori's glass composition contains Nb₂O₅ *as an essential component*, as clearly described in col. 4, lines 34-40.

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It is also noted that the other references, Brandstorm, Tsukamoto and Kaneko which were cited for various applications of glass fibers, also fail to teach the above feature of amended claim 6.

Moreover, the above feature of amended claim 6 is no trivial modification of the prior art, for at least the reasons set forth.

According to the "*Background Art*" of this application, a conventional composition for forming glass fibers, such as Komori's, contains alkali metal oxides ($\text{Li}_2\text{O} + \text{Na}_2\text{O} + \text{K}_2\text{O}$) over 2 mol%, Nb_2O_5 or La_2O_3 for suppressing devitrification during the spinning. However, alkali metal ions easily elute from glass containing large amounts of alkali metal oxides to gradually break a glass structure so that glass fiber is caused degradation in strength. Further, the glass fiber employed as reinforcement for an FRP rod has a problem in bonding with a matrix resin. The bonding is weakened due to alkali metal ions eluted from glass, and that a mechanical strength of the FRP rod is degraded. Meanwhile, Nb_2O_5 or La_2O_3 is a very expensive component and extensively deforms the network of glass formed of SiO_2 and the like. The glass improves in elastic modulus, but becomes brittle and has a significantly degraded tensile strength. Thus, the glass fiber formed of the composition containing Nb_2O_5 or La_2O_3 has an increased unit material cost and is not suitable as reinforcement for a large concrete structure under large stress.

On the other hand, according to page 6/line 10 to page 7/line 5 and page 9/lines 14-19 of the specification, adjusting the BaO/CaO mol ratio to 0.3-1.6 makes it possible to suppress $\text{Li}_2\text{O} + \text{Na}_2\text{O} + \text{K}_2\text{O}$ to 2 mol% or less and to eliminate Nb_2O_5 and La_2O_3 , while suppressing devitrification during spinning. By suppressing alkali metal oxides, a glass fiber is capable of

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having hardly eluting alkali metal ions, and having excellent bonding with a resin to suitably serve as a reinforcement for the glass-fiber reinforced plastics. By eliminating Nb_2O_5 and La_2O_3 , a glass fiber is capable of being manufactured at a low price and improved in tensile strength.

For at least the above reasons, Applicants respectfully submit that amended claim 6 and claims 7-16 dependent therefrom all patently define over the prior art.

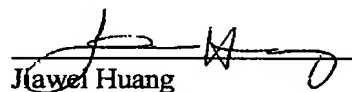
CONCLUSION

For at least the foregoing reasons, it is believed that all pending claims 6-16 of the present application patently define over the prior art and are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

Date: 4-17-2009

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Respectfully submitted,
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